Understanding How the Arts Can Enhance Learning

Susan H. Magsamen and Antonio M. Battro

ABSTRACT—Understanding how the arts can enhance learning has long been discussed and debated among educators, students, parents, artists, art historians, and philosophers. Many anecdotal examples reference the value and benefits of the arts in a range of fields and learning domains. Emerging methodologies in the brain sciences have added new perspectives and research-based approaches to better understand the role the arts might play in learning. Psychologists, cognitive scientists, and now neuroscientists are approaching this topic by exploring memory, sensory systems, and other biological measures. The interdisciplinary and potentially interdependence of these fields to work together to identify the neurological mechanisms involved in the arts may offer educators, parents, and child care providers with important information about how we learning takes place. By bringing together uncommon and divergent thinking from a wide range of disciplines, there is an opportunity to change the way we teach, parent, and serve children using the arts to help enhance learning. This issue of Mind, Brain, and Education celebrates the range of approaches that are emerging to shed light and insight in this field.

“My own brain is to me the most unaccountable of machinery—always buzzing, humming, soaring roaring diving, and then buried in mud. And why? What’s this passion for?”

–Virginia Woolf

Virginia Woolf perhaps best captures what goes on inside our heads as we create, image, and explore. A fundamental understanding and deep desire for the arts are defining characteristics of what it means to be human. The capacity to be moved by images, forms, sounds, and movements are found among the artifacts of early human beings. For centuries, philosophers have speculated on the links between perception, beauty, creativity, and pleasure. Educators, parents, and child care providers have all intuitively known the power of the arts and their multisensory magic for learning and teaching. In recent years, scientists have learned a great deal about sensory systems and their response to the visual world, three-dimensional space, sound, touch, tastes, and smells.

There have also been several recent research initiatives including conferences, workshops, and summits focused on rigorously exploring the potential connections between the arts and learning. The National Science Foundation, Harvard’s Project Zero, The Dana Foundation, Johns Hopkins University, and others all have launched initiatives from different perspectives to more deeply explore the possibility of both correlation and causal relations between the arts and learning (Dana Foundation, 2008; Johns Hopkins University, 2009). These diverse initiatives have shown both the enormous potential and the complexities of studying a field that has long been the domain of the humanities.

Emerging methodologies in the brain sciences offer new ways to further explore learning, memory, sensory systems, and other biological measures associated with the arts. For example, Jeremy Nathans, Professor of Molecular Biology and Genetics at Johns Hopkins University, and Margaret Livingston, Professor of Neurobiology at Harvard University, are researching both animal and human visual systems to better understand visual perception (Tsao & Livingstone, 2008; Xu et al., 2004). Russell Epstein, Assistant Professor in the Department of Psychology Center for Cognitive Neuroscience at the University of Pennsylvania, has been studying the neural bases of scene perception and spatial cognition in humans using neuroimaging and behavioral testing. His work offers potential insights into how people successfully move and act in the world (Schinazi & Epstein, 2010). The work of these researchers and many others has huge implications for decisions about teaching content across the curriculum; playful learning; arts in schools; architectural design; landscape...
The study of how the arts can enhance learning and relate to brain science is not without its critics and skeptics. Some in the humanities think the brain sciences can bring little understanding to the study of the arts. In discussions between fields, a primal fear is almost always present that understanding the learning mechanisms relevant to the arts will take away the mystery and magic, diminishing the value of art in the culture. The brain researcher’s response is almost always the same—“The brain is very complex and we know very little about how it works. But the awe of the creation of art cannot be diminished but only enhanced by new knowledge.” Similarly, knowing what a star is made of does not change the fact that we still wish upon it as it shoots through the sky.

These discussions and conversations are important because in the end they help people to better understand one another and find common language, goals, and purpose to solve larger societal issues. Imagine if we could use the arts to inspire, inform, and engage children to learn better (see, e.g., Winner et al., 2007). In that spirit, this special section is dedicated to continuing to explore the arts and learning. This topic is so wide, complex, and challenging that it requires starting by explaining the context that nurtured this issue as well as the choice of the articles we are honored to publish.

First, this collection of articles was originated at the Fifth International Summer School on Mind, Brain, and Education held at the Ettore Majorana Foundation and Centre for Scientific Culture in Erice, Sicily, where we organized a Summer Workshop (August 1–5, 2010) with codirectors Antonio M. Battro and Kurt W. Fischer. Thanks to the generosity of the Foundation and its president, Antonino Zichichi, we were the guests of this celebrated scientific center in one of the most remarkable historical sites of Sicily. The mythical foundations of Erice were masterfully described by Virgil in the V Book of the Aenidae—sitting on the top of a mountain viewing the blue seas of the Mediterranean in the unique archeological landscape of Greek temples and theaters of Segesta and Selinunte. A course dedicated to the arts and the brain in this exceptional environment was most inspiring for everyone—junior and senior scholars coming from North and South America, Europe, and Japan with different scientific backgrounds and all deeply committed to education.

In this issue, we are pleased to publish a sample of the Erice presentations that cover a broad spectrum of interests in the fields of educational neuroscience and aesthetics, and we look forward to continuing publications in this field in other issues of the journal. The articles start with a proposal by Jean Pierre Changeux, a leader in neuroscience and an expert art connoisseur, who discusses fundamental issues in the neuroscience of art and a possible research program for the next decade. James Croft explores epistemological issues in neuroaesthetics. Horacio C. Reggini proposes a new geometric theory of perspectives based upon the psychophysical brain constraints of constancy of size that can transform the way people take pictures and understand art.

Kim Sheridan analyzes how visual art classes develop new habits of mind. The filmmaker Soraya Umewaka presented at Erice a remarkable documentary on the everyday life and creativity of people in poor neighborhoods of Rio de Janeiro, and in a brief reflection in this issue she expresses her approach to art and education. Susan Magsamen outlines the challenges and opportunities facing families in the vast panorama of today’s arts and learning environments.

These articles combine research with artistic expression and represent a range of disciplines including the humanities, philosophy, education, communications, neuroscience, and psychology—a suitable array for the emerging field of mind, brain, and education. The interdisciplinary and international nature of the group provided diverse and passionate conversation and artistic perspectives concerning the rigorous study of the arts and the value of cross-field exploration.

REFERENCES